

REPORT DOCUMENTATION PAGE			Form Approved OMB No. 0704-0188	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.				
1. AGENCY USE ONLY (Leave blank)		2. REPORT DATE 12 November 1993	3. REPORT TYPE AND DATES COVERED Final	
4. TITLE AND SUBTITLE Association of Training Injuries and Physical Fitness in U.S. Army Combat Engineers			5. FUNDING NUMBERS	
6. AUTHOR(S) K. Reynolds, J. Knapik, R. Hoyt, M. Mayo, J. Bremner, B. Jones				
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) U.S. Army Research Institute of Environmental Medicine Natick, MA 01760-5007			8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES)			10. SPONSORING / MONITORING AGENCY REPORT NUMBER	
11. SUPPLEMENTARY NOTES				
12a. DISTRIBUTION / AVAILABILITY STATEMENT Approved for public release; distribution is unlimited			12b. DISTRIBUTION CODE	
13. ABSTRACT (Maximum 200 words) Combat Engineers engage in heavy construction activities but like other Army units, also perform weightbearing physical activities such as running and marching. We investigated associations between training injuries and physical fitness over a one year period in 147 combat engineers. Incidence of new musculoskeletal injuries was documented by a complete review of each soldier's medical record. Physical fitness was measured by the standard Army Physical Fitness Test. Soldiers performed the maximum number of pushups (PU) in 2 min, the maximum number of situps (SU) in 2 min and a 2-mile run for time. Sixty-eight percent of the soldiers suffered one or more training injuries. Subjects performed an average (+SD) 61+13 PU, 65+11 SU and ran an average time of 14.6+1.3 min. Subjects were divided into quartiles based on their scores in each fitness test. A 2X4 chi-square test (CST) and linear trend test (LTT) were used to compare quartiles (Q) for those injured at least once vs those not injured. For run time, soldiers in the fastest quartile were at lower injury risk than those in the slower quartiles (CST p=0.03, LTT p=0.02, Risk Ratio for Q1 vs Q4=1.5). There were no significant differences among the quartiles for PU (truncated after 200 words)				
14. SUBJECT TERMS Combat Engineers, physical fitness, musculoskeletal injuries			15. NUMBER OF PAGES 1	
			16. PRICE CODE	
17. SECURITY CLASSIFICATION OF REPORT Unclassified	18. SECURITY CLASSIFICATION OF THIS PAGE Unclassified	19. SECURITY CLASSIFICATION OF ABSTRACT Unclassified	20. LIMITATION OF ABSTRACT UL	

19960419 085

GENERAL INSTRUCTIONS FOR COMPLETING SF 298

The Report Documentation Page (RDP) is used in announcing and cataloging reports. It is important that this information be consistent with the rest of the report, particularly the cover and title page. Instructions for filling in each block of the form follow. It is important to *stay within the lines* to meet *optical scanning requirements*.

Block 1. Agency Use Only (Leave blank).

Block 2. Report Date. Full publication date including day, month, and year, if available (e.g. 1 Jan 88). Must cite at least the year.

Block 3. Type of Report and Dates Covered. State whether report is interim, final, etc. If applicable, enter inclusive report dates (e.g. 10 Jun 87 - 30 Jun 88).

Block 4. Title and Subtitle. A title is taken from the part of the report that provides the most meaningful and complete information. When a report is prepared in more than one volume, repeat the primary title, add volume number, and include subtitle for the specific volume. On classified documents enter the title classification in parentheses.

Block 5. Funding Numbers. To include contract and grant numbers; may include program element number(s), project number(s), task number(s), and work unit number(s). Use the following labels:

C - Contract	PR - Project
G - Grant	TA - Task
PE - Program Element	WU - Work Unit Accession No.

Block 6. Author(s). Name(s) of person(s) responsible for writing the report, performing the research, or credited with the content of the report. If editor or compiler, this should follow the name(s).

Block 7. Performing Organization Name(s) and Address(es). Self-explanatory.

Block 8. Performing Organization Report Number. Enter the unique alphanumeric report number(s) assigned by the organization performing the report.

Block 9. Sponsoring/Monitoring Agency Name(s) and Address(es). Self-explanatory.

Block 10. Sponsoring/Monitoring Agency Report Number. (If known)

Block 11. Supplementary Notes. Enter information not included elsewhere such as: Prepared in cooperation with...; Trans. of...; To be published in.... When a report is revised, include a statement whether the new report supersedes or supplements the older report.

Block 12a. Distribution/Availability Statement. Denotes public availability or limitations. Cite any availability to the public. Enter additional limitations or special markings in all capitals (e.g. NOFORN, REL, ITAR).

DOD - See DoDD 5230.24, "Distribution Statements on Technical Documents."

DOE - See authorities.

NASA - See Handbook NHB 2200.2.

NTIS - Leave blank.

Block 12b. Distribution Code.

DOD - Leave blank.

DOE - Enter DOE distribution categories from the Standard Distribution for Unclassified Scientific and Technical Reports.

NASA - Leave blank.

NTIS - Leave blank.

Block 13. Abstract. Include a brief (*Maximum 200 words*) factual summary of the most significant information contained in the report.

Block 14. Subject Terms. Keywords or phrases identifying major subjects in the report.

Block 15. Number of Pages. Enter the total number of pages.

Block 16. Price Code. Enter appropriate price code (*NTIS only*).

Blocks 17. - 19. Security Classifications. Self-explanatory. Enter U.S. Security Classification in accordance with U.S. Security Regulations (i.e., UNCLASSIFIED). If form contains classified information, stamp classification on the top and bottom of the page.

Block 20. Limitation of Abstract. This block must be completed to assign a limitation to the abstract. Enter either UL (unlimited) or SAR (same as report). An entry in this block is necessary if the abstract is to be limited. If blank, the abstract is assumed to be unlimited.

PUBLICATION AND TECHNICAL PRESENTATION CLEARANCE

1. Report/Presentation Title: Association of Training Injuries and Physical Fitness in U.S. Army Combat Engineers
2. Authors: K. Reynolds, J. Knapik, R. Hoyt, M. Mayo, J. Bremmer, B. Jones
3. Type of Document: ☒ Abstract ☐ Poster ☐ Presentation ☐ Book Chapter
☐ Journal Article ☐ Technical Report ☐ Review Article
4. Proposed journal or publication: Med.Sci. Sports Exerc.
5. Meeting name, dates & location: American College of Sports Medicine Annual Mtg., Indianapolis, IN, 1-4 June 1994

6. The attached material ~~contains~~/does not contain classified material. It ~~does~~/does not contain any potentially sensitive or controversial material.

K. Reynolds, LTC
First Author

Michelle F. Mayo
Second Author

Signatures of Other USARIEM Authors

7. Editorial Comments ~~have~~/have not been requested.

Technical Editor

Date

8. Recommend Clearance:

B. Jones, LTC
John D. Hottel

Research Division Chief

Research Director

(for LTC Bruce Jones by verbal permission)

9. ☒ Clearance is granted. ☐ Clearance is not granted.

☐ This must be forwarded to USAMRDC for clearance.

Gerald P. Krueger
Colonel, MS
Commanding

10. STO/Task number WB Budget Project No. 3M16 2787A87A Cost Code 4430285WB4A00
11. USARIEM Clearance Number P94-24(Abs) by RPOD 15 Nov 93 (Date)

ABSTRACT OF PROPOSED FREE COMMUNICATION SLIDE OR POSTER

1994 American College of Sports Medicine Annual Meeting

DEADLINE: Must be received in the National Center by November 15, 1993.

(Abstracts received after this date will be returned.)

A MAILING ADDRESS OF PRESENTING AUTHOR

Please type. Provide full name (no initials).

ACSM I.D. Number: 123175

Degree: M.D.

Birth Date: 05/07/53

Name: Reynolds

Katy

I
Middle Initial

Address: USARIEM -Occupational Medicine
Kansas Street

City: Natick

State: MA

Zip: 01760-5007

Country: USA

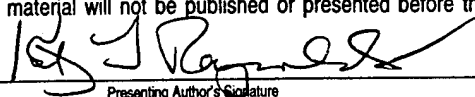
Home Telephone: Area Code 508 # 478-5868

Business Telephone: 508-651-4699

Fax: 508-651-4195

☐ This address is different than listing in ACSM membership files—please change files to reflect this address.

B Each Abstract form submitted MUST BE SIGNED by a member of the American College of Sports Medicine. The undersigned presenting author is responsible for ensuring that the paper, if accepted, will be presented and that the material will not be published or presented before the Annual Meeting.



Presenting Author's Signature

Is presenting author a student? () Yes (X) No

Is presenting author a member of ACSM? (X) Yes () No

If not, the signature of an ACSM-member co-author is needed.

Print name _____

ACSM Member's Signature

READ ALL ACCOMPANYING INSTRUCTIONS BEFORE BEGINNING. Remember, your abstract will appear in *Medicine and Science in Sports and Exercise* exactly as you type it.

IMPORTANT: Abstracts will undergo a blind review. Submit this original form completely filled in plus 5 blind photocopies showing no information about institution, clinic, or address (see accompanying instructions).

SUBMIT FLAT with cardboard backing to:

ABSTRACTS BY MAIL:

American College of Sports Medicine

P.O. Box 1440

Indianapolis, IN 46206-1440 USA

FOR COURIER SERVICE USE

STREET ADDRESS:

American College of Sports Medicine

401 West Michigan Street

Indianapolis, IN 46202-3233 USA

Major Category Number:

Enter the major category number.

1 3 0 0

Subcategory Number:

When appropriate, enter the subcategory number which represents the INTENDED FOCUS of your abstract.

Presentation Preference will not affect acceptance.

(i.e. poster, slide, indifferent)

(Check one only):

☒ Poster session

☐ Slide session

☐ Indifferent

Blue lines are printer's cut lines; do not type on or outside of these lines. See sample abstract attached.

ASSOCIATION OF TRAINING INJURIES AND PHYSICAL FITNESS IN U.S. ARMY COMBAT ENGINEERS

K Reynolds, J Knapik, FACSM, R Hoyt, M Mayo, J Bremner, B Jones. U.S. Army Research Institute of Environmental Medicine, Natick, MA 01760-5007

Combat Engineers engage in heavy construction activities but like other Army units, also perform weightbearing physical activities such as running and marching. We investigated associations between training injuries and physical fitness over a one year period in 147 combat engineers. Incidence of new musculoskeletal injuries was documented by a complete review of each soldier's medical record. Physical fitness was measured by the standard Army Physical Fitness Test. Soldiers performed the maximum number of pushups (PU) in 2 min, the maximum number of situps (SU) in 2 min and a 2-mile run for time. Sixty-eight percent of the soldiers suffered one or more training injuries. Subjects performed an average (\pm SD) 61 ± 13 PU, 65 ± 11 SU and ran an average time of 14.6 ± 1.3 min. Subjects were divided into quartiles based on their scores in each fitness test. A 2X4 chi-square test (CST) and linear trend test (LTT) were used to compare quartiles (Q) for those injured at least once vs those not injured. For run time, soldiers in the fastest quartile were at lower injury risk than those in the slower quartiles (CST $p=0.03$, LTT $p=0.02$, Risk Ratio for Q1 vs Q4=1.5). There were no significant differences among the quartiles for PU (CST $p=0.92$, LTT $p=0.97$) or SU (CST $p=0.74$, LTT $p=0.79$). These data suggest that lower aerobic fitness is associated with musculoskeletal injuries in physically active combat engineers.

For National Center use only
Abstract No.

Please note in a few words what impact this research would have on the public (if applicable).

COMPLETE ALL SECTIONS. INCOMPLETE FORMS WILL BE RETURNED.